PATENT SPECIFICATION 765,125

Inventor:—SIDNEY FRASER BARCLAY.

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Index at Acceptance:—Class 47, A14C.

International Classification:—A62c.

COMPLETE SPECIFICATION.

Improvements relating to Fire-Extinguishing Installations.

We, MATHER & PLATT LIMITED, a British Company, of Park Works, Manchester 10, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

THIS INVENTION relates to upright type automatic spray sprinklers for fire extinguishing installations, and has for its object to provide an improvement in the degree of uniformity of the spray distribution.

According to the invention, we provide a deflector above the sprinkler head which comprises a plate having a conical portion surrounded by a flat annulus, and a further plate beneath the first plate, having a similar conical portion, with downwardly directed teeth around its edge and gaps between the teeth breaking into the conical portion.

Referring to the accompanying drawing:

Figure 1 is a side elevation of a spray sprinkler in accordance with the invention.

Figure 2 is a front elevation.

Figure 3 is a part section.

Figure 4 is a plan.

The device has a sprinkler head 1 with yoke arms 2 supporting an inverted cone 3 to which is fixed a deflector consisting of two plates 4 and 5.

Each plate has a flat central part, that of the lower plate 5 resting on the base of the inverted cone 3, and both having a central hole for a securing rivet or bolt 6. The conical portions of the plates 4 and 5 nest together, being of the same diameter at the base, but whereas the upper plate 4 has a flat part 7 around the cone, the lower has its edge stamped out in teeth 8 which are turned down, the gaps between the teeth 8 breaking into the conical part. The upper plate 4 covers the gaps between the teeth 8 where they extend into the conical part of the plate 5.

In operation, water issuing from the sprinkler orifice is spread out by the inverted cone 3 and impinges against the under side of the deflector. Some is deflected downwards by the teeth 8, some passes between the teeth 8 in line with the conical surface of the plate 5, and some travels out horizontally under the peripheral part 7 of the upper plate 5. Also water is scattered by striking the tips of the teeth 8, and there is interference between the basic water flows, the result being an umbrella-shaped discharge of fine water spray of uniform distribution.

In one embodiment of the invention the diameter of the top plate 4 is $1\frac{3}{4}$" and that of the lower plate 5 is $1\frac{1}{8}$". The teeth 8 are 3/16" long and the gaps between them extend 3/32" into the conical part. The conical parts make an angle of 10° with the horizontal.

WHAT WE CLAIM IS:

1. A spray sprinkler for fire extinguishing installations, having a deflector above the sprinkler head, which comprises a plate having a conical portion surrounded by a flat annulus, and a further plate beneath the first plate, having a similar conical portion, with downwardly directed teeth around its edge and gaps between the teeth breaking into the conical portion.

2. A spray sprinkler, substantially as described and as shown in the accompanying drawing.

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[*Price 3s. 0d.*]

PROVISIONAL SPECIFICATION.

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THIS INVENTION relates to upright type automatic spray sprinklers for fire extinguishing installations, and has for its object to provide an improvement in the degree of uniformity of the spray distribution.

According to the invention, we provide a deflector above the sprinkler head, which comprises a plate having a conical portion surrounded by a flat annulus, and a further plate beneath the first plate, having a similar conical portion, with downwardly directed teeth around its edge and gaps between the teeth breaking into the conical portion.

The deflector may be fixed on an inverted cone supported by yoke arms on the sprinkler head. Each plate has a flat central part, that of the lower plate resting on the base of the inverted cone, and both having a central hole for a securing rivet or bolt. The conical portions of the plates nest together, being of the same diameter at the base, but whereas the upper plate has a flat part around the cone, the lower has its edge stamped out in teeth which are turned down. The upper plate covers the gaps between the teeth where they extend into the conical part.

In operation, water issuing from the sprinkler orifice is spread out by the inverted cone and impinges against the under side of the deflector. Some is deflected downwards by the teeth, some passes between the teeth in line with the conical surface, and some travels out horizontally under the upper plate. Also water is scattered by striking the tips of the teeth, and there is interference between the basic water flows, the result being an unbrella-shaped discharge of fine water spray of uniform distribution.

In one embodiment of the invention the diameter of the top plate is 1⅝" and that of the lower plate 1⅛". The teeth are 3/16" long and the gaps between them extend 3/32" into the conical part. The conical parts make an angle of 10° with the horizontal.

MARKS & CLERK.

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765,125 COMPLETE SPECIFICATION
1 SHEET
This drawing is a reproduction of the Original on a reduced scale.

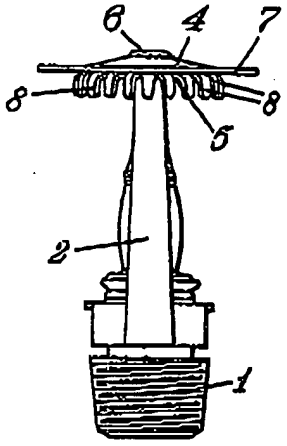

Fig.1

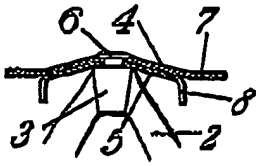

Fig.3

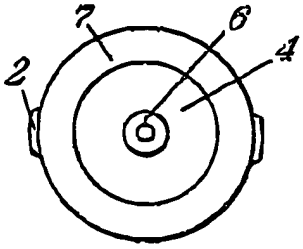

Fig.4

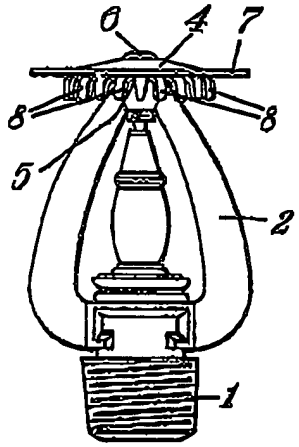

Fig.2

Bulletin No 2

GRINNELL
GRINNELL FIRE PROTECTION SYSTEMS COMPANY INC

Duraspeed® Sprinkler — Rack Storage — Q-17

• Upright

• Pendent

Description

Duraspeed Rack Storage is a fast operating and durable solder-type sprinkler that is maintenance free. All components are non ferrous and construction is simple with a minimum of moving parts to assure dependable operation. The unique solder joint is covered with a corrosion resistant compound for additional protection. The sprinkler is designed to spread a blanket of finely distributed water over a fire.

New Issue January 1975

It can be used on both wet and dry pipe systems. Duraspeed Rack Storage sprinkler operates over a wide range of predetermined temperatures — from 165° to 350°F. Special coatings including lead and Corroproof are available. Two sprinkler types are available. The pendent with Q17-P deflector for use when piping is close to the ceiling, or concealed in the ceiling; the upright with Q17-U deflector — for use on exposed piping.

Applications

The Duraspeed Rack Storage sprinkler is suitable for all fire hazards — light, ordinary, and extra. It was specifically designed for rack storage installations usually in warehouses or manufacturing plants where its quick response and shape of water spray makes it possible to control and extinguish fires between racks of stored materials.

• Typical installation

Operation

The Grinnell Duraspeed Sprinkler design is based on halves of a bell-shaped copper heat collector that are joined by solder with predetermined melt ratings — from 165° to 350°F. Heat absorbed by the collector is conducted directly to the soldered joint. The solder melts the collector springs apart, and water is released. Upon striking the deflector, the water breaks up into a fine, uniform spray which is distributed over a specific area.

Features

- Fast response.
- Simple, proven construction.
- Automatic operation.
- Protected solder joint.
- For wet and dry systems.
- Fixed temperature actuation.
- Variety of finishes

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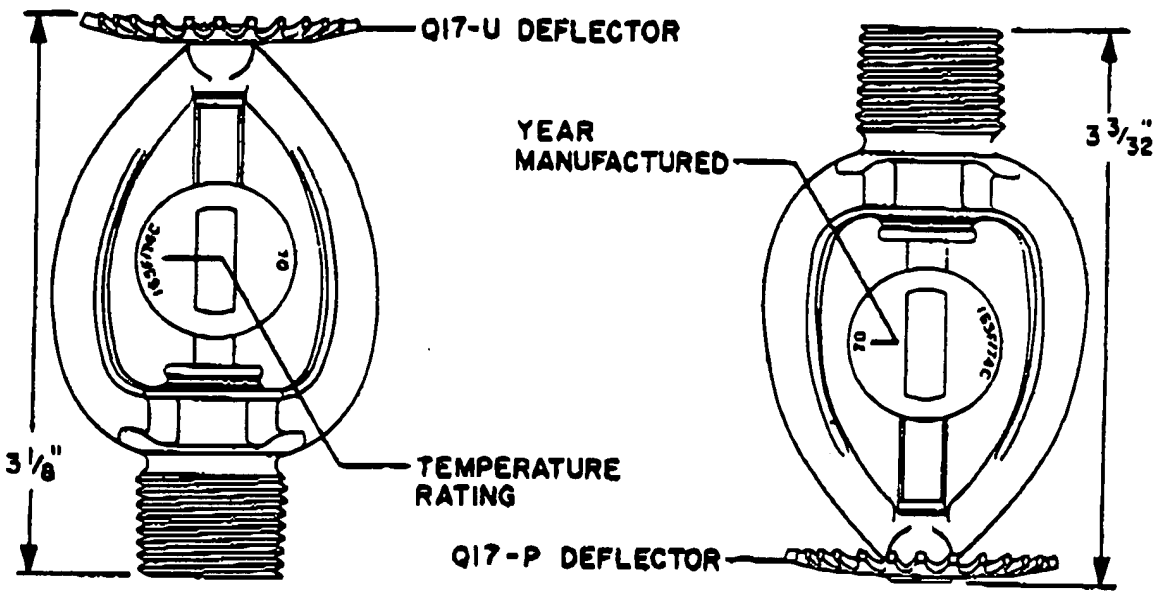


Upright Rack Storage Sprinkler

Pendent Rack Storage Sprinkler

Specification Data

Temperature Ratings: 165° 286°
212° 350°

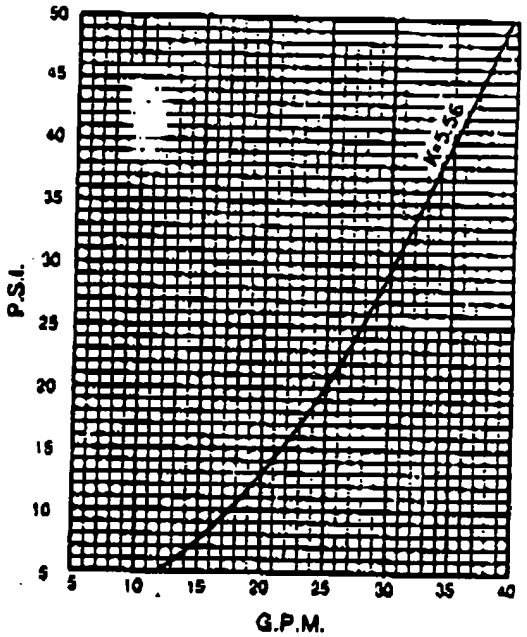
Pipe Thread Connection ½" NPT

Nominal Orifice Size ½"

Deflector Type Q17-U (Upright).
Q17-P (Pendant)

Finish Plain chrome plated, lead coated, Corroproof lead coated and Corroproof

To Specify Grinnell Duraspeed Rack Storage Sprinkler, ½" orifice (temp rating), (finish) with Q17-U or Q-17P) deflector and quantity.



Discharge curve of Duraspeed Rack Storage Sprinkler

For further information contact:
Your nearest Grinnell district office listed in the yellow pages.
or contact:
Grinnell Fire Protection Systems Company Inc
50 Dorrance Street
Providence Rhode Island 02903

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